

## A NEW SPECIES OF GALEODEA (CASSIDAE, GASTROPODA) FROM QUEENSLAND, AUSTRALIA

by

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### ABSTRACT

A new species of *Galeodea* from the Capricorn Channel, Queensland is named and the shell, operculum, radula and jaws are figured and described. It has no close relationship with any known Recent or fossil species although an Upper Oligocene species from Table Cape, Tasmania may be ancestral.

### INTRODUCTION

Several undescribed species of gastropods have been collected recently in the Capricorn Channel, Queensland, some of which are presently being described. Two new species of Volutidae from this area are described elsewhere in this volume. Another of the new species is a *Galeodea* which is named below.

*Galeodea* is based on a Recent Mediterranean species and a few Recent and numerous fossil species have been assigned to the genus or its synonyms. Many of these species have subsequently been placed in other genera (e.g. Kanno, 1973; Hickman, 1980).

*Galeodea* is sometimes included in the Oocorythidae (e.g. Quinn, 1980) or in the Cassidae (e.g. Beu, 1980). The Oocorythidae is regarded as a subfamily of the Tonnidae by Beu (1980). Beu's (1980) conclusions on the placement of *Galeodea* are apparently based on the anatomical description of the type species of *Galeodea* by Reynell (1905, 1906) and are followed here.

Family Cassidae

Subfamily Cassinae

Genus *Galeodea* Link, 1807.

(Synonyms *Morio* Montfort, 1810; *Echinora* Schumacher, 1817; *Cassidaria* Lamarck, 1822).

***Galeodea maccamleyi* n.sp.** Pl.1, figs 1-4; plates 2 and 3.

Shell (pl.1, figs 1-4) small for genus (up to 37mm in length), ovate, inflated, very narrowly-umbilicate to non-umbilicate, with fine spiral cords and 4 rows of nodules on last whorl. Protoconch of about 1¼ smooth whorls, apex markedly deviated. Teleoconch with convex whorls, suture narrowly-channelled. Sculpture of teleoconch of low, flat-topped to rounded spiral cords with equal to wider interspaces, crossed by closely-spaced, fine growth-lines. Secondary spirals occur between many of the primary cords, particularly on body whorl. 13-16 spirals on antepenultimate whorl, 17-19 on penultimate whorl and 73-80 on body whorl, base and siphonal canal. Penultimate whorl with weak angulation formed by spiral becoming stronger and developing nodules which encompass 3-4 spirals. Three

similar rows of nodules on body whorl in addition to row at shoulder; one row from level of suture and two rows on base. Nodules sharp to rounded, uppermost row with sharpest nodules, 12-15 on body whorl. A thin, yellowish periostracum is raised into low lamellae in interspaces along growth lines. Aperture with posterior half of thin inner lip spread over parietal wall forming a thin, transparent callus; anterior half also thin and free of base and, in some specimens, siphonal canal. Outer lip with sharp edge, thickened within, with single, large denticle at posterior end, behind which is a narrow posterior notch. Up to 10 weak denticles over remainder of inner surface of outer lip. A weak denticle on inner lip lies opposite large posterior denticle on outer lip in specimens with mature aperture and 1-2 exceedingly weak, short rugae immediately anterior to this denticle in one specimen; 2-5 very weak denticles at posterior end of inner lip developed in a few specimens. External varix narrow, possessing typical teleoconch sculpture. Siphonal canal rather short, twisted dorsally, narrow, open, anterior end not notched and canal and fasciole sculptured with spirals continuous with those of base. Colour orange-brown to fawn, nodules white and in some specimens, narrow, irregular axial white bands present on body whorl. Basal rows of nodules completely white over first half of body whorl. Aperture white, siphonal canal pale brown externally, white internally, orange-brown at distal extremity.

<i>Dimensions</i>	Length	Length of aperture (excluding canal)	Diameter
Holotype	30.1 mm	18.2 mm	22.8 mm
Paratypes (C.137655a)	37.1	22.5	26.3
(C.137655b)	32.6	19.2	24.3
(C.132221)	30.3	19.2	21.7
Topotypes (F. McCamley colln)	34.0	21.3	24.0
	30.6	18.3	21.9
	30.3	18.7	22.4
	25.7	17.0	19.9
AM, C.137656	18.6	11.8	13.3
Queensland Museum (Mo12609)	31.7	19.1	24.2
	25.2	17.7	20.2

Operculum (Plate 2, figs 1-4) brown, flat, opaque, with subterminal to sublateral nucleus; distinct growth rugae externally.

Radula (Plate 3, figs 1-5) with triangular cutting edge on central teeth having cusp formula 7-10 + 1+7-10; cusps sharp; bases rather narrow, median cusp about twice as large as lateral cusps. Lateral teeth cusp formula 2-3 + 1+8-10; cusps similar in size and shape to those on central teeth. Marginal teeth curved, tapering, narrow and blunt distally; inner marginal teeth with 1-3 short cusps on inner edge, outer marginal teeth smooth.

Animal with head and foot unpigmented, cephalic tentacles slender, with eyes in swellings at outer bases. Proboscis large (about 20mm long in semi-retracted state) and extended from mouth 5mm-10mm in two of the three specimens examined. Buccal mass 1.8-2mm long (i.e. short relative to proboscis), jaws (Plate 3, figs 6, 7) relatively large (1.3mm in length), pointed on outer ends, broad inner end, composed of small, overlapping, elongate, scale-like units (Plate 3, fig 7). Salivary glands large, compact; accessory glands could not be distinguished readily from salivary glands. Pallial cavity with well-developed ctenidium and bipectinate osphradium. Glandular pallial oviduct massive in one specimen, poorly developed in the other. Other anatomical details not determined.

## TYPE MATERIAL

Holotype (Plate 1, fig 1) (Australian Museum (= AM), C.137654); shell, operculum, dissected animal (♂); radula and jaw (on SEM stub 1188); off Lady Musgrave Island, Capricorn Channel, Queensland, in 238m, 8 May 1982, pres. F. McCamley.

Paratype (Plate 1, fig 2) (AM, C.137655a); shell, operculum, partially dissected animal (♀); radula and jaw (on SEM stub 1188); same data as last.

Paratype (Plate 1, fig 3) (AM, C.137655b); shell; same data as last.

Paratype (AM, C.132221); shell; off Lady Elliot Island, Capricorn Channel, Queensland, 220m, 1981, pres. J. Whittle.

Three paratypes (Queensland Museum, Mo12609); one undissected preserved female and two shells; between Lady Musgrave Island and Lady Elliot Island, Capricorn Channel, 220m, 9 June 1981, coll. N. Schulz.

### Other Material Examined

Topotypes (4) (F. McCamley colln, Sydney). N.E. of Lady Musgrave Island, 23°38,8'S, 152°45.5'E, 365m, 14 December 1977, *Globigerina* mud/siliceous sponge, coll. W.F. Ponder, I. Loch & P. Terrill, HMAS "Kimbla," 14 December 1977 (2, AM, C.137656).

### Remarks

The most similar Recent species to *G. maccamleyi* is *G. triganceae* Dell, 1953 from New Zealand. That species differs primarily in having more numerous (22-25) nodules on the body whorl, coarser spiral sculpture and a non-channelled suture. *Galeodea echinophorella* (Hirase MS) Habe, 1961 from Japan is superficially similar to *G. maccamleyi* but differs in its lack of a colour pattern, coarser spiral sculpture on the spire whorls, simple sutures and, as far as can be judged from the available illustrations, a shorter canal. The authorship of *G. echinophorella* is confused. Hirase (1934) published a photograph and name and Habe and Kuroda (1952), recognising this name as a *nomen nudum*, introduced the name in their checklist. Habe (1961) appears to be the first author to provide a brief diagnosis (in Japanese).

Some species included in the genus *Echinophoria* Sacco, 1890, closely resemble species of *Galeodea*. The shell characters distinguishing *Echinophoria* from *Galeodea* have been elaborated by Hickman (1980).

Little variation is seen in the available material with the exception of two specimens (C.137656) which are much smaller than the other specimens, but, in other respects, are very similar (Plate 1, fig 4).

Two Australian fossil species, *Cassidaria gradata* Tate, 1889 and *C. wilsoni* Tate, 1889, have been included in *Galeodea* by Darragh (1970). *Galeodea wilsoni* from Spring Creek near Torquay (late Oligocene) has four rows of small nodules on the body whorl but differs from *G. maccamleyi* in having rather strongly-shouldered spire whorls and a non-channelled suture. Tate's (1889) figure shows a short, notched canal bearing a prominent ridge and topotypes in the National Museum of Victoria also show this feature (T.A. Darragh, *in lit*). These features are inconsistent with *Galeodea*. Very similar specimens from Table Cape, (= Fossil Bluff), Tasmania (Early Miocene) (Plate 1, fig 6) agree closely with "*G*" *wilsoni* but have a typical *Galeodea* canal. Localities mentioned by Tate (1889) for *G. gradata* were Muddy Creek, River Murray Cliffs and Schnapper Point (all Lower Miocene). Specimens of *G. gradata* from Balcombe Bay (i.e. Schnapper Point, the locality from which Tate's figured specimen was obtained) (Plate 1, fig 5) and Muddy Creek in the Australian Museum indicate that a consistently different form is represented at both of these localities. A specimen from Balcombe Bay is figured for comparison with *G. maccamleyi*. None of these species has distinctly channelled sutures but the Muddy Creek form of *G. gradata* does show incipient channelling. All the fossil taxa have distinct wrinkles over most of the inner lip, a feature not seen in the Recent species.

The new species is named for Mr F. McCamley of Blakehurst, Sydney, who kindly donated the holotype and two paratypes and made other specimens available for examination.

## ACKNOWLEDGEMENTS

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## PLATE 1

- 1-4. *Galeodea maccamleyi* n.sp. 1, holotype. 2, 3 paratypes (AM, C.137655a, b). 4, dwarf specimen, N.E. of Lady Musgrave Island, 365m (AM, C.137656).  
5. *Galeodea gradata* (Tate). Fossil Beach, Balcombe Bay, Mornington Peninsula, Victoria; Middle Miocene (AM, C.74895).  
6. *Galeodea* sp. Fossil Bluff, near Wynyard, Tasmania; Early Miocene (AM, F.14563).  
Scale = 10mm.

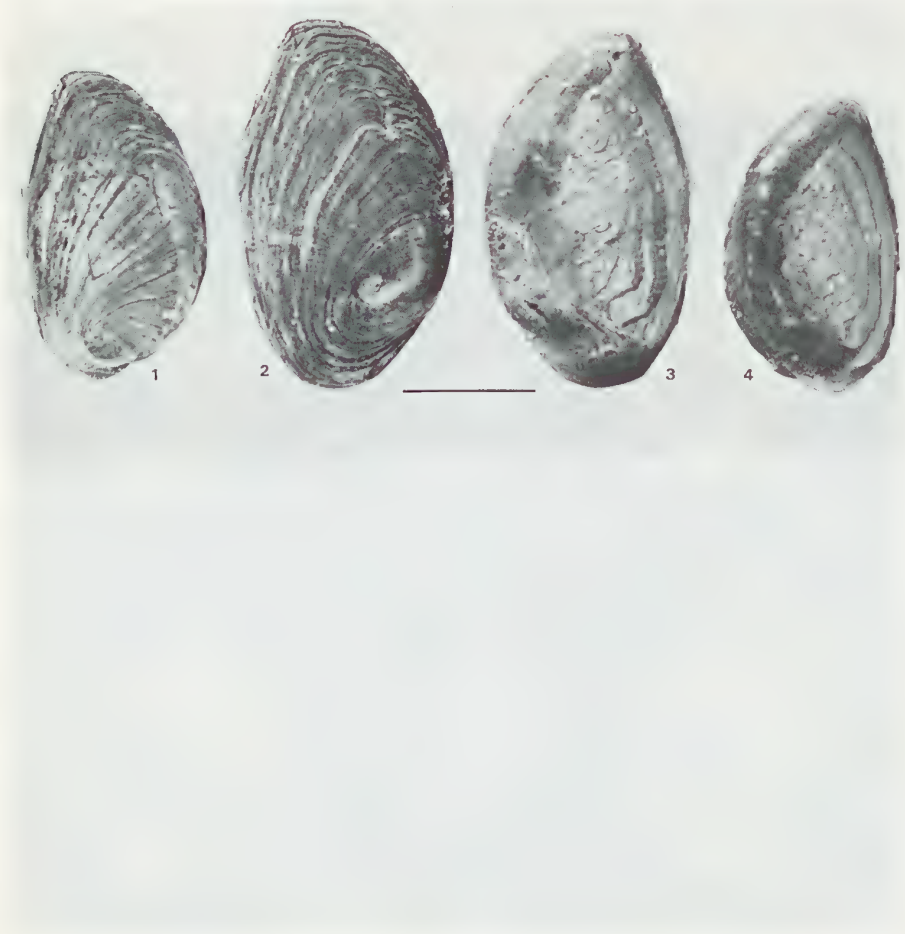


PLATE 2

1-4. Opercula of *Galeodea maccamleyi* n.sp. 1, 3, paratype (AM, C.137655a). 2, 4, holotype.

Figs 1, 2, outer side; 3, 4, inner side.

Scale = 5mm.



## PLATE 3

Radula and jaw of *Galeodea maccamleyi* n.sp. 1-5, Radula; 1-3, holotype, 2, detail of central and lateral teeth, 3, marginal teeth; 4, 5, paratype (C.137655a), 4, detail of central and lateral teeth, 5, marginal teeth. 6, 7, jaw of holotype, 7, detail of jaw platelets.

Scale = 0.05mm

